Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Experiments of the highly non-linear Rayleigh-Taylor instability regime and dependence on Atwood Number L. ELGIN, T. HANDY, University of Michigan, G. MALAMUD, University of Michigan; Nuclear Research Center NEGEV, Israel, C.M. HUNTINGTON, Lawrence Livermore National Laboratory, M.R. TRANTHAM, S.R. KLEIN, C.C. KURANZ, R.P. DRAKE, University of Michigan, D. SHVARTS, University of Michigan; Nuclear Research Center NEGEV, Israel — Potential flow models predict that a Rayleigh-Taylor unstable system will reach a terminal velocity (and constant Froude number) at low Atwood numbers. Numerical simulations predict a re-acceleration phase of Rayleigh-Taylor Instability (RTI) and higher Froude number at late times. To observe this effect, we are conducting a series of experiments at OMEGA 60 to measure single-mode RTI growth at low and high Atwood numbers and late times. X-ray radiographs spanning 40+ ns capture the evolution of these systems. Experimental design challenges and initial results are discussed here. This work is funded by the Lawrence Livermore National Laboratory under subcontract B614207, and was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract No. DE-AC52-07NA27344.

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Date submitted: 14 Jul 2017 Electronic form version 1.4